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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/742,121	12/19/2003	Mark S. Pavlin	ARZ-024635-US	5037

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EXAMINER	
MARTIN, LAURA E	
ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/742,121	PAVLIN, MARK S.	
	Examiner	Art Unit	
	Laura E. Martin	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-40 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 4-27-05
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 6, 9, 11, 12, 14, 16, 18, 22, 23, 26, 28, 33, 37, and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Schwarz et al (US 5006170).

As per claim 1, Schwarz et al. teaches a method of printing comprising charging a printhead (C2, L9-10) of an inkjet printer with ink (C2, L14-15), the ink being a fluid homogenous mixture (C14, L32-34) comprising polymerized fatty acid based polyamide resin (C6, L53), organic solvent (propellant), and colorant (C4, L18), wherein the organic solvent comprises a first solvent and a second solvent ("examples of suitable propellants for the hot melt inks of the present invention include" C13, L63+ does not limit solvent to one of the following

propellants), where the first solvent comprises at least one solvent selected from the solvent consisting a single amide, a single carbamide, or a single hydroxyl group (urea C13, L67) as the only non-hydrocarbon moiety in the solvent; and the second solvent comprises at least one hydrocarbon solvent (C14, L4-5); and transferring the ink from the printhead onto the substrate (C2, L15).

As per claim 2, Schwarz et al. teaches the printer being a drop-on-demand printer (hot ink melt C3, L62-63 is a type of drop-on-demand printer C1, L43-44).

As per claim 4, 12, 14, and 16 Schwarz et al. teaches the first solvent comprising at least one of N-methylpyrrolidinone, N,N-dimethylformamide, N,N-dimethylacetamide, and tetramethylurea (suitable propellants include ureas C13, L67), and the second solvent comprises at least one terpene hydrocarbon (suitable propellants include hydrocarbons C14, L4-5).

As per claim 6 and 18, Schwarz et al. teaches the organic solvent further comprising a third solvent ("examples of suitable propellants for the hot melt inks of the present invention include" C13, L63+ does not limit solvent to one of the following propellants), selected from α-hydroxy-carboxylic ester, polyalkylene glycol alkyl ether, and ketone-containing solvents (suitable propellants include keytones C14, L4).

As per claim 9, Schwarz et al. teaches a printing ink composition comprising colorant, resin, and solvent (C4, L18), where the resin is a polymerized fatty acid-based polyamide resin (C6, L53), the solvent comprises a first solvent and a second solvent ("examples of suitable propellants for the hot melt inks of the present invention include" C13, L63+ does not limit solvent to one

of the following propellants) wherein the first solvent comprises at least one solvent having a single amide group or a single carbamide group (urea C13, L67) as the only non-hydrocarbon moiety in the solvent; and the second solvent comprises at least one hydrocarbon solvent (C14, L4-5).

As per claim 11 and 28, Schwarz et al. teaches the components of the first solvent each having a total of 5 to 11 atoms selected from carbon, nitrogen, and oxygen (dimethyl urea and butanol C13, L67 have 5 carbon and oxygen atoms combined).

As per claim 22 and 37, Schwarz et al. teaches the resin comprising 5-40 wt% of the total weight of the resin or solvent (C4, L21 the binder is present in an effective amount, from 0-85%).

As per claim 23 and 38, Schwarz et al. teaches the solvent comprising at least 30 wt% of the total weight of resin and solvent (the propellant is present in an effective amount from 10 to about 90%).

As per claim 26, Schwarz et al. teaches a printing ink composition comprising colorant, resin, and solvent (C4, L18), where the resin is a polymerized fatty acid-based polyamide resin (C6, L52), the solvent comprises a first solvent and a second solvent ("examples of suitable propellants for the hot melt inks of the present invention include" C13, L63+ does not limit solvent to one of the following propellants), wherein the first solvent comprises at least one solvent having a single hydroxyl group as the only non-hydrocarbon moiety in the solvent (butanol C13, L65); and the second solvent comprises at least one hydrocarbon (C14, L4-5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schwarz et al. (US 5006170) in view of Yamada et al. (US 5302631).

Schwarz et al. teaches the printing ink of claim 14; however, a second solvent comprising at least one terpene selected from the group consisting of α-pinene, β-pinene, limonene, and terpinolene.

Yamaba et al. teaches a solvent comprising α-pinene.

It would have been obvious at the time of the invention to combine the teachings of Schwarz et al. with the solvent of Yamaba et al. because α-pinene increases the spreadability of the ink.

Claims 5, 7, 19, 29, 31, 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwarz et al. (US 5006170) in view of Shawcross et al. (US 6767394).

As per claims 7, 19, and 34 Schwarz et al. teaches the ink of claim 18 with a third solvent; however, the third solvent is not selected from methyl lactate, ethyl lactate, n-proply lactate, isopropyl lactate, diethylene glycol methyl ether, diproplyene glycol ether, or cyclohexane.

Shawcross et al. teaches a solvent comprising cyclohexane (C5, L31).

It would have been obvious at the time of the invention to combine the teachings of Schwarz et al. with the solvent of Shawcross et al. because it mixes well with water.

As per claim 5, 29, 31, and 32Schwarz et al. teaches an ink composition with organic solvents.

However, the first solvent is not taught to comprise a hydroxyl containing solvent selected from cyclohexanol, 1-hexanol, 2-hexanol, 3-hexanol, cis-2-hexen-1-ol, cycloheptanol, 1-heptanol, 2-heptanol, 2-ethyl-1-hexanol, 1-octanol, 1-nonanol, 3,5,5-trimethyl—hexanol, 1-decanol, α-terineol, and 3,7-dimethyl-3-octanol (tetrahydrolinalool) and the second solvent is not taught to comprise a mineral spirit.

Shawcross et al. teaches a solvent comprising octanol (C6, L5-6) and hexanol (C6, L6), as well as a mineral spirit (turpentine C6, L11).

It would have been obvious at the time of the invention to combine the ink of Schwarz et al. with the solvent of Shawcross et al. because Schwarz et al. does not list all of the specific hydroxyl containing solvents that can be utilized in the taught design.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schwarz et al. (US 5006170) in view of Visser et al. (US 6148165) and Lin et al. (US 6328393).

Schwarz et al. teaches a printing ink while an amide containing solvent (urea C13, L67) and a hydrocarbon solvent (C14, L4-5); however, he does not teach the specific chemicals N-methylpyrrolidinone and terpinolene.

Visser et al. teaches that N-methylpyrrolidinone is a known amide (C 6, L49-51).

It would have been obvious at the time of the invention to combine the ink of Schwarz et al. with the N-methylpyrrolidinone taught by Visser et al. because it is a known amide.

Lin et al. teaches that terpinolene is a known hydrocarbon (C7, L22-25).

It would have been obvious at the time of the invention to combine the ink of Lin et al. with the terpinolene taught by Lin et al. because it is a known hydrocarbon.

Claims 21 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwarz et al. (US 5006170) in view of Bedford et al. (US 2004/0226476).

Schwarz et al. teaches an ink composition with a polyamide (C6, L53).

Schwarz et al. does not teach polyamide being a reaction product of polymerized fatty acid, ethylene diamine, hexamethylenediamine, and fatty acid.

Bedford et al. teaches a dimmer based tetra-amide (polyamide) that is the reaction product of dimer acid (polymerized fatty acid), ethylene diamine, stearic acid (fatty acid) P18, L7+.

It would have been obvious to combine the polyamide taught by Schwarz et al. with that of Bedford et al. because the formula taught by Bedford is a suitable material for phase changing ink.

Claims 24, 25, 39, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwarz et al. (US 5006170) in view of Adkins et al. (US 6113679).

As per claims 24, 25, 39, and 40 Schwarz et al. teaches ink; however, he does not disclose the viscosity at temperatures between 25°C and 60°C

Adkins discloses a viscosity between of 10-20 cps at 25° C for ink (C2, L51-54) and a flashpoint of greater than 40°C (C7, L58-61).

It would have been obvious at the time of the invention to combine the teachings of Schwartz et al. with the measurements of Adkins because it is necessary to measure the properties of ink during experimentation so as to find the best possible operating conditions.

As per claims 3, 8, 10, 20, 27, and 35; Schwarz et al. teaches the claimed invention except for the ranges of propellants within the organic solvent (first solvent is at least 20% by weight, the second solvent is up to 80% by weight, and the third solvent is up to 50% by weight of the organic solvent in the ink). It would have been obvious to one having ordinary skill in the art at the time the invention was made to experiment using ranges of solvents so as to find the optimum combination, since it has been held that where the general conditions of

a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

As per claims 13 and 30, Schwarz et al. discloses the claimed invention except for the value of the viscosity of the solvent or parts thereof. It would have been obvious to one having ordinary skill in the art at the tie the invention was made to measure all parameters, including the viscosity, of every chemical added into a solution during experimentation, Since it has been held that discovering an optimum value as a result effective variable only involves routine skill in the art *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David M. Gray can be reached on (571) 272-2119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Laura E. Martin

David Gray
Primary Examiner